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## Employment Research Newsletter

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Volume 26 | Number 3

Article 3

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7-1-2019

**Employment Research, Vol. 26, No. 3, July 2019**

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### Citation

W.E. Upjohn Institute. 2019. Employment Research. 26(3). [https://doi.org/10.17848/1075-8445.26\(3\)](https://doi.org/10.17848/1075-8445.26(3))

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## EMPLOYMENT RESEARCH

# The Effect of New Market-Rate Housing Construction on the Low-Income Housing Market

*Evan Mast*

## ARTICLE HIGHLIGHTS

■ *There is a heated debate on whether building new housing will improve affordability. I use household migration data to study this question.*

■ *I find that migrants to new central city multifamily buildings come from neighborhoods with slightly lower incomes, and migrants into these neighborhoods come from areas with still lower incomes, and so forth.*

■ *Using a simulation model, I find that 100 new market-rate units ultimately create 70 vacancies in middle-income neighborhoods. These openings should lower prices, but the effect may be small in the least expensive areas, where prices are close to the marginal cost of providing housing.*

Housing costs and the share of income spent on housing are rising rapidly in many large cities, inspiring a heated debate on the appropriate policy response. “Yes-In-My-Backyard” (YIMBY) groups advocate for market-based strategies that relax regulation and increase housing construction. Their rationale is Economics 101: increasing supply decreases prices.

Opposing groups argue that the YIMBY position is flawed because unsubsidized new housing is typically much more expensive than the housing units that are affordable to middle- and low-income households. They claim that these types of housing are so different that new construction is irrelevant to rents and home prices faced by low-income households, and they advocate for subsidized housing and voucher programs instead of new market-rate construction.

Prior research has shown that new housing depreciates and “filters” to become affordable over the course of decades, but little is known about shorter timeframes of, say, three to five years—a horizon that is quite relevant to the acute housing crunch at the center of the current debate.

One common theory is that a “migration chain” mechanism could quickly link expensive new housing to cheaper types of housing. Some households who would have otherwise occupied cheaper units move into new units, reducing demand and lowering prices for the units they leave vacant. The process iterates when a second round of households moves into the units the first round left vacant. This ripple effect spreads out further and further, eventually reducing prices in middle- or low-income areas. However, if different parts of the housing market (like new construction and low-income neighborhoods) are strongly separated, with little cross-migration, the chain may never actually reach areas most in need.

I use data on household address histories to directly examine this mechanism and shed light on

**Individuals frequently move to neighborhoods that are slightly different from their previous neighborhoods, but they rarely make large jumps.**

the effect of new housing on the market for lower-income housing. I highlight three main findings:

- 1) Individuals frequently move to neighborhoods that are slightly different from their previous neighborhoods, but rarely make large jumps. This implies that there are divisions between segments of the market, but they are frequently crossed.
- 2) New construction is connected to low-income areas through a series of moves. To show this, I identify residents of new multifamily buildings in large cities, their previous address, the current residents of those addresses, and so on. This sequence quickly adds income areas from the bottom half and even the bottom fifth, consistent with strong migratory connections.
- 3) New construction opens the housing market in low-income areas by reducing demand. A simulation model suggests that building 100 new market-rate units sparks a chain of moves that eventually leads 70 people to move out of neighborhoods from the bottom half of the income distribution, and 39 people to move out of neighborhoods from the bottom fifth. This effect should occur within five years of the new units’ completion.

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## The Effect of New Market-Rate Housing Construction on the Low-Income Housing Market

### The Ripple Effect of Migration Chains

The intuition behind the migration chain mechanism is simple—new housing creates a ripple effect that gradually reaches areas that are more and more different from the new housing itself. A person may move from their old unit that rented for \$2,500 to a new unit that costs \$3,000, and another person may move from a \$2,000 apartment to the unit the first person vacated. As this chain continues, it may add housing units that are affordable to middle- and low-income households.

However, the importance of this mechanism in the real world is complicated by the fact that a chain can end in each round. For example, if a new condo is purchased to be used as a second home, the buyer does not vacate their previous unit and the

chain never starts. Similarly, a chain could end because a unit is filled by a new household, such as a young adult moving out of her parents' house. If the unit is filled by a household from outside of the region, the subsequent benefits no longer accrue to the area that actually built the housing. The effect of new housing on lower-income areas will be stronger the longer chains last, as there will be more opportunities to reach such an area.

The other key factor influencing the power of migration chains is the strength of migratory connections between lower-quality housing and new housing. If there is a part of the market that is very separated from new housing—suppose, for example, that few people move from low-income areas to middle-income areas—the chain will not reach that area.

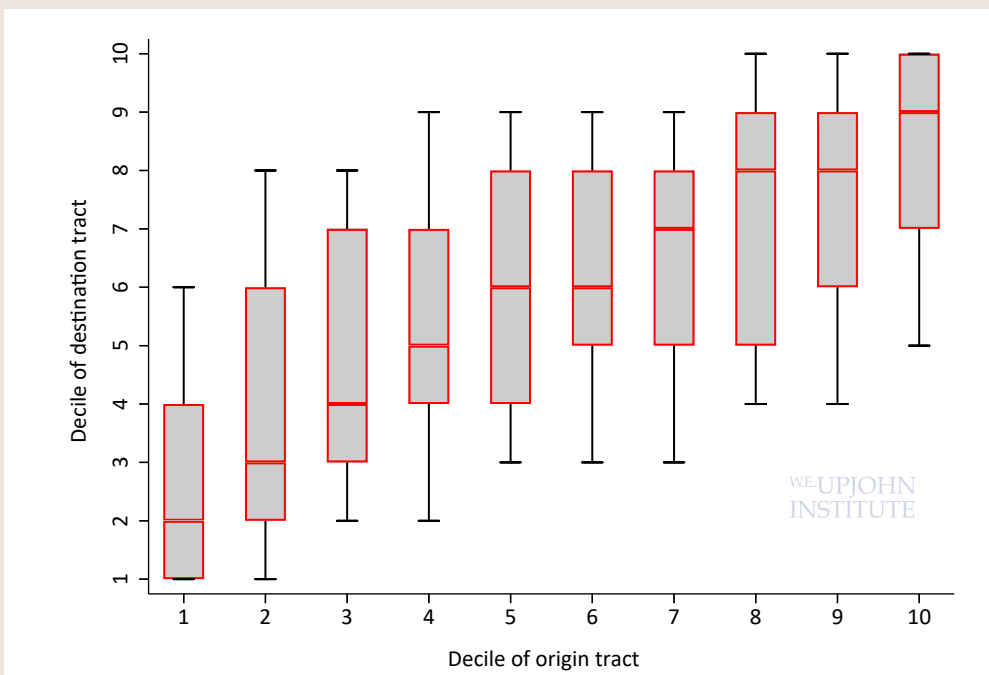
### Migratory Connections between New Construction and Low-Income Areas

Because migratory connections are a crucial determinant of migration chains' effect, I start by using address history data from Infutor Data Solutions, a marketing intelligence company, to broadly examine how people move across neighborhoods in the Chicago metropolitan area.<sup>1</sup> Figure 1 shows how migrants' destinations depend on where they originated. There are 10 boxes, one for each tenth, or decile, of the neighborhood (as defined by census tracts) household income distribution, with the poorest origin neighborhoods on the left and the richest on the right. Each box shows the range of household income, again in deciles, for the destination neighborhoods. For example, among movers from the second-lowest neighborhood income decile, the bottom 10 percent end up in the poorest neighborhoods, but the median mover reaches the third income decile of neighborhood income, the top quarter reach at least the sixth decile, and the top 10 percent reach the eighth decile.

Individuals originating in top decile income tracts very rarely move to a below-median income neighborhood, and few people from lower deciles migrate above the median. While this suggests that divisions between types of neighborhoods exist, these barriers appear to be permeable. Individuals frequently move from the seventh decile to the ninth, the sixth to the fourth, etc. The top decile and lower deciles are connected through a series of moves, which is precisely the sort of connectivity the migration chain mechanism requires.

I next sharpen focus to the migratory connections between new construction and low-income areas and track moves at the building level. I identify 686 large, new, market-rate multifamily buildings in 12 large central cities and track 52,000 of their

**Figure 1 Migration between Neighborhoods with Different Income Levels**



NOTE: The figure shows the relationship between origin and destination neighborhood income of movers within the Chicago metropolitan area. Neighborhood income is ranked and grouped into tenths, or deciles. Each box represents the middle 50 percent of movers from a given origin neighborhood income decile, with the horizontal red line in the box representing the median mover; the whiskers represent the bottom and top tenths of movers from the neighborhood income decile.

SOURCE: Author's calculations using data from Infutor Data Solutions and the U.S. Census Bureau.

current residents to their previous buildings of residence. I then find the tenants currently living in those buildings and track them to their previous residence, iterating for six rounds and, in order to focus on local connectivity, keeping only within-metro-area moves in each round.

Results are shown in Figure 2. About 20 percent of residents moving into the new buildings came from neighborhoods (census tracts) with household incomes below the median for that metro area; this proportion rises steadily to 40 percent in round six. Similar patterns emerge for other characteristics, suggesting strong chained mobility connections between different types of neighborhoods. These relationships are inconsistent with the idea of a highly segmented market in which new construction does not affect low-income areas. The results also highlight the geographically diffuse nature of migration chains—only 30 percent of movers in round six originate within the principal city of the metro area. This means that market mechanisms will reach a wide set of neighborhoods, but also makes it less likely that any particular neighborhood will be affected.

### Simulation Model

While these statistics on migratory connections are useful for showing general characteristics of the housing market, they do not quantify the effect of new housing on the lower-income market. To do this, I simulate a richer model that allows migration chains to end and considers other real-world complications. The simulation allows me to estimate an intuitive metric of a new unit's effect on other types of neighborhoods. For each type of neighborhood—for example, those with household incomes below the metro area median—I define the number of “equivalent units” a new market-rate housing unit creates as the probability that its migration chain

reaches that type of neighborhood before ending. The intuition is simple: when a household leaves a neighborhood, it has an effect similar to building another (depreciated) unit in that neighborhood. The household that left reduces demand by one, while building a unit increases supply by one—either way, the result is a newly vacant unit. This metric fits naturally in the policy debate, where “inclusionary zoning” ordinances require developers to build some income-restricted units for each market-rate unit.

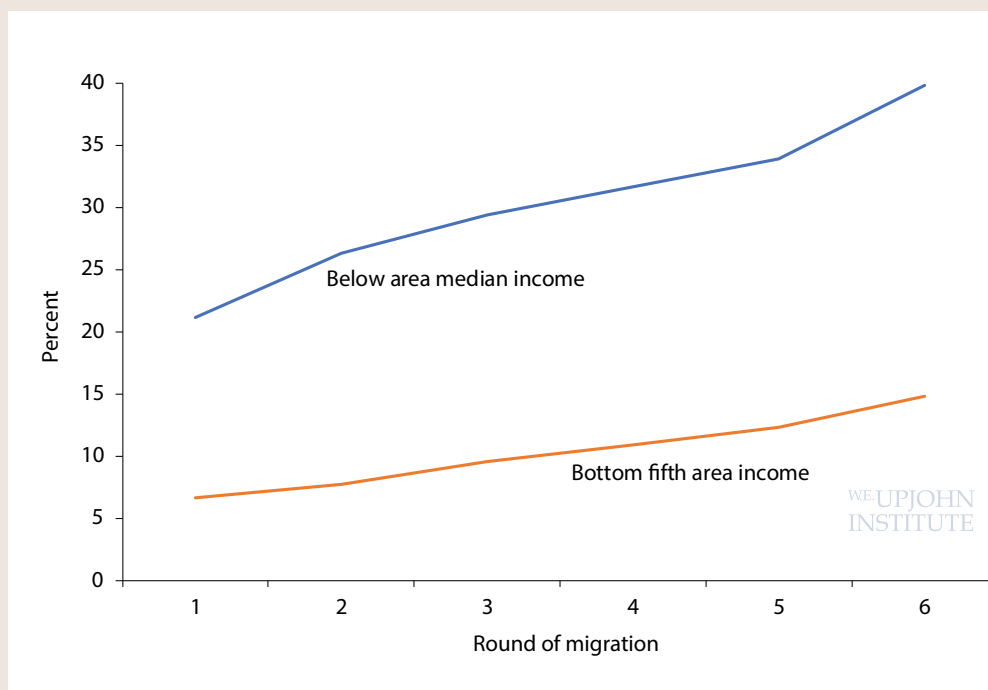
The simulation results suggest that market-rate construction has an important effect on the middle- and low-income housing markets. In my baseline specification, 100 new market-rate units create 70 equivalent units in neighborhoods with household incomes below the metro area median, and 39 in neighborhoods with household incomes from the bottom fifth. This should open these housing

markets and lower prices, all else equal, though I do not directly estimate these implied effects. Notably, however, the simulation implies these equivalent units are created within five years of the completion of the new building.

### Policy implications

My results suggest that new market-rate housing construction can improve the market for housing in low- and middle-income neighborhoods, even in the short run. The effects are diffuse and appear to benefit diverse areas of a metropolitan area. Policies that increase market-rate construction are thus likely to improve affordability even for housing units that bear little similarity to the new construction. These results also suggest that if policymakers expend the political capital required to get new housing proposals through the often subjective and onerous approval process, there are

**Figure 2 Types of Neighborhoods Included in Migration Chain from New Housing**



NOTE: The figure plots the percentage of individuals in each round of the migration sequence whose origin neighborhood had the selected characteristics.

SOURCE: Author's calculations using data from Infutor Data Solutions and the U.S. Census Bureau.

## The Effect of New Market-Rate Housing Construction...

likely to be benefits throughout the region.

However, there are several shortcomings of the migration chain mechanism, particularly in the lowest-cost and most-rent-burdened neighborhoods. Census tracts in the bottom fifth of household income and the top fifth of rent burden (rent as a share of income) have an average vacancy rate of 12.8 percent, compared to 8.1 percent in the rest of my sample. Given that rents are generally already low in such neighborhoods, this suggests that reducing demand through the migration chain mechanism is unlikely to lower costs further, perhaps because rents have reached the minimum cost of housing. Moreover, there may also be important amenity effects if the migration chain reduces population in these areas, such as reduced retail options, school closures, or increased crime. Vouchers or policies that lower the cost of housing (such as reductions in property tax or utility rates) may be necessary to lower prices in this segment of the market.

In addition, while I focus on regional implications, new buildings could have very different effects on their immediate area, where they may change amenities or household composition in ways that affect prices. There is little existing direct evidence on how these factors change following new construction, and this could be a fruitful area for future research.

### Note

1. I focus on one metropolitan area because there is large variation across both race and income in large cities. Results are similar for other areas.

*This article draws on research from an Upjohn Institute working paper, which can be found at [https://research.upjohn.org/up\\_workingpapers/307](https://research.upjohn.org/up_workingpapers/307).*

*Evan Mast is an economist at the Upjohn Institute.*

# Medical Innovation and the Employment of Cancer Patients

**R. Vincent Pohl**

Cancer is the second-most common cause of mortality and morbidity in developed countries. In addition to its direct costs in terms of quality-adjusted life years lost, it also contributes to the economic costs of disease as cancer patients often reduce their working hours or cease employment completely.

Recent decades have seen increased innovation in the treatment of many types of cancer. Pharmaceutical innovation has resulted in new chemotherapy drugs—often used in combinations—that are more effective in targeting tumors while reducing harm for healthy body tissue. In addition, new surgical techniques alleviate side effects and lead to shorter recovery times.

I investigate whether medical innovation in the treatment of breast and prostate cancers, which are the most common types of cancers among women and men, respectively, also lead to a reduction in the economic costs of cancer. Specifically, I use large administrative databases from Canada to estimate how the employment effect of a cancer diagnosis is moderated by medical innovation. I employ a difference-in-differences strategy combined with matching to estimate the causal effect of a cancer diagnosis and how it changes with medical innovation.

Confirming previous research, I first find that a cancer diagnosis reduces employment by 2 to 4 percentage points. Second, the cumulative medical innovation that improved cancer treatment during the 1990s and 2000s led to a decrease in the negative employment effects of prostate and breast cancer by about 65 percent. Hence, the approval of additional drugs and the introduction of other medical technologies over this time period are associated with a substantial reduction in the economic costs of cancer. Finally, I consider the employment effects of cancer diagnoses and medical innovation by cancer patients' education. I find that the benefits of innovation are limited to individuals with postsecondary education, while cancer patients with lower levels of education experience a larger decline in employment.

From a policy perspective, these results suggest that innovations in cancer treatment may provide benefits beyond direct medical effects. As innovative cancer treatments can be very expensive, it is therefore important to account for economic benefits such as smaller reductions in labor income and, as a result, tax revenue when determining whether the benefits of a new treatment option outweigh its cost. The heterogeneous effects

## ARTICLE HIGHLIGHTS

- *Innovations in cancer treatment may alleviate the economic costs of cancer diagnoses, such as a decline of labor supply.*
- *I find that medical innovation reduces the negative employment effect of cancer diagnoses by about 65 percent during the study period.*
- *The economic benefits of medical innovation are limited to cancer patients with postsecondary education, raising concerns about equal access to new treatments.*

by education indicate that the mere existence of new medical technology may not automatically lead to improved economic outcomes, but rather that there are barriers to access them.

## Background

The most common types of cancers are breast and prostate, affecting about 26,000 women and 21,000 men, respectively, in Canada annually. While most cancers affect older individuals, a substantial subgroup of breast and prostate cancer patients is diagnosed during their working age. Because cancer treatment is lengthy and can cause severe side effects, patients undergoing treatment often reduce their labor supply or stop working completely. These negative labor market effects may be alleviated by improved treatment options that are more likely to cure cancer in a shorter amount of time and lead to fewer side effects.

To investigate the effect of cancer diagnoses and medical innovation on employment, I combine data from several sources. First, I identify breast and prostate cancer patients from the Canadian Cancer Database. Second, I use individual tax returns from the Longitudinal Worker File to measure employment of cancer patients before and after their diagnosis, as well as employment of individuals who were never diagnosed with cancer and who serve as a control group. Statistics Canada merged these data sets to the 1991 population census, which contains individual characteristics such as educational attainment.

Finally, I measure medical innovation in two different ways. A first, more narrow measure is the number of drugs that are approved for the treatment of breast and prostate cancer. Pharmaceutical innovation is important, as chemotherapy is one of the main treatment options for cancer. Throughout the study period, the 1990s and 2000s, several important new drugs were approved—the chemotherapy drug Trastuzumab for the treatment

of breast cancer, and triptorelin, a luteinizing hormone-releasing hormone analogue used to fight prostate cancer.

In addition to chemotherapy, surgery and radiation are used as cancer treatment. Notable innovations include laparoscopic radical prostatectomy, a minimally invasive surgical technique, and breast-conserving surgery, both of which reduce recovery time and potential side effects after surgery. To broadly capture innovation in these areas, I use international patent data. From these records, I construct a quality-weighted patent index that measures the aggregate and cumulative innovative activity related to breast and prostate cancer treatment.

Before I estimate the effect of cancer diagnoses and medical innovation on employment, I use a matching technique to create a control group consisting of individuals without cancer that is identical to cancer patients along all observed dimensions. I then employ a difference-in-differences strategy—I compare employment rates of cancer patients and the matched control group both before and after the cancer diagnosis. I consider a five-year window

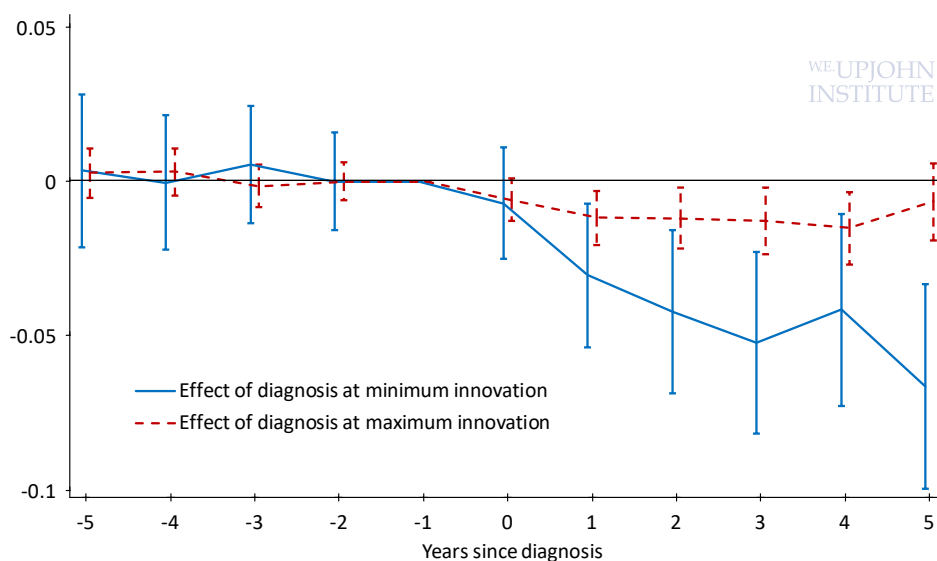
before and after the diagnosis and allow the employment effects of cancer diagnoses and medical innovation to vary over time, as it is plausible that these effects do not remain constant within this time frame.

## Results

I find that some breast and prostate cancer patients reduce their employment after the diagnosis when compared to the matched control group. Men are 1.8 percentage points less likely to be employed after a prostate cancer diagnosis, and women are 3.9 percentage points less likely to be employed after a breast cancer diagnosis.

Medical innovation substantially reduces the negative employment effects of cancer diagnoses. Figure 1 shows the effect of a prostate cancer diagnosis on employment as a function of the number of drugs available for the treatment of this disease. In 1992 when 14 drugs were approved, employment of prostate cancer patients dropped by a few percentage points initially, and the decline reached more than 5 percentage

**Figure 1 Effect of Prostate Cancer on Employment by Number of Approved Drugs**



SOURCE: Statistics Canada and author's calculations.



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points after three years (blue line; I show the effects prior to the diagnosis to rule out any preexisting trends). In contrast, when 27 approved drugs were available in 2010, a prostate diagnosis reduced employment by only about 1 percentage point during the first five years (red line).

For the employment effects of breast cancer diagnoses and the role of medical innovation, Figure 2 shows a similar pattern. As the number of drugs approved for the treatment of breast cancer increased from 17 to 39 between 1992 and 2010, the decline in employment following a diagnosis became smaller. At the lowest level of pharmaceutical innovation, breast cancer reduces employment by about 2.5 percentage points initially and up to 5 percentage points three years after the diagnosis and beyond (blue line). At the highest number of drugs available, the initial decline in employment is similar, but after three years, the employment effect becomes indistinguishable from 0 (red line).

When repeating this exercise with the quality-weighted patent index instead of the number of approved

drugs, I find similar patterns (not shown). Hence, I provide evidence suggesting that medical innovation in the form of new drugs and medical technology alleviates the economic costs of breast and prostate cancer diagnoses. On average, medical innovation reduced the decline in employment among cancer patients by about 65 percent between 1992 and 2010. These effects imply that the annual average earnings losses due to a prostate and breast cancer diagnosis are \$1,100 and \$600, respectively, lower than they would have been without medical innovation. Therefore, a substantial economic benefit arises from these innovations, in addition to any resulting reductions in mortality and morbidity.

To better understand how education interacts with medical innovation in the employment of cancer patients, I split the sample by educational attainment into individuals without a high school degree, those who have graduated from high school but have no further education, and those with at least some postsecondary education. Among these subsamples, I only observe a mitigating

impact of medical innovation on the negative employment effect of cancer diagnoses for breast and prostate cancer patients with postsecondary education. This is despite the fact that individuals with lower levels of education reduce their employment by more than those with postsecondary education.

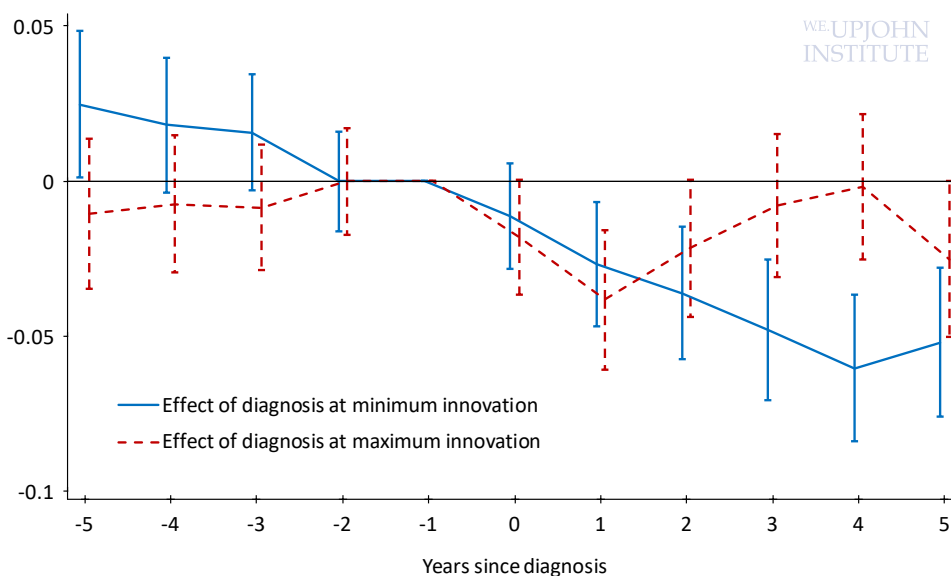
Although my data do not allow me to determine the underlying mechanism, there are several potential explanations for the observed heterogeneity by education. First, higher levels of education may help cancer patients identify medical providers who use innovative treatments. Second, education may enable cancer patients to obtain information on treatment options and demand that their medical providers use up-to-date treatments. Third, adherence to complex treatment regimens could be facilitated by higher educational attainment. Finally, it is possible that cancer patients with low education levels work in physically more demanding jobs where it is more difficult to undergo a modern high-intensity cancer treatment while remaining employed. Independent of the actual mechanism, the fact that only highly educated individuals profit from innovative cancer treatments suggests that the economic benefits of medical innovation are distributed unequally.

### Implications

The empirical findings have several important implications. First, they highlight the importance of accounting for indirect (economic) benefits in a cost-benefit analysis of new medical technologies. Although the benefits in terms of lower earnings losses are smaller by an order of magnitude than the annual cost of an intensive cancer treatment, which can exceed \$100,000, the benefits are substantial. Therefore, they should be considered in addition to potential improvements in terms of mortality and morbidity.

Second, these findings suggest potential policies that can alleviate

**Figure 2 Effect of Breast Cancer on Employment by Number of Approved Drugs**



SOURCE: Statistics Canada and author's calculations.

the economic costs of disease. It is of particular concern that cancer patients experience lower employment rates and hence earnings losses in addition to the pain and suffering caused by their disease. Thus, encouraging and subsidizing medical innovation may have the dual benefit of mitigating both the medical and economic consequences of cancer and other diseases. Investments in research that lead to new treatment options may very well have a positive return if the resulting innovation has economic in addition to medical benefits.

Last, the fact that medical innovation does not yield economic gains for cancer patients with lower levels of education raises concerns about unequal access to up-to-date treatment options. Especially when medical research is publicly financed, it is reasonable to expect that resulting innovation should benefit cancer patients irrespective of their demographic or socioeconomic background. Moreover, in the case of the employment effects of cancer diagnoses, individuals with the lowest levels of education suffer the highest economic cost. Therefore, policymakers may need to ensure that new and innovative treatment options are accessible to all patients who would benefit from them, such as through information campaigns targeted at these individuals. In addition, medical education could increasingly emphasize the importance of accounting for patients' socioeconomic backgrounds in choosing appropriate cancer treatments.

In sum, these findings highlight the importance of considering interactions between labor markets and health care and point out several policy options aimed at reducing the economic burden of disease.

*This article draws on research from an Upjohn Institute working paper, which can be found at [https://research.upjohn.org/up\\_workingpapers/306](https://research.upjohn.org/up_workingpapers/306).*

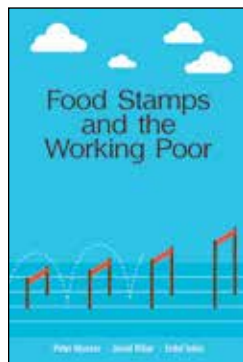
*R. Vincent Pohl is an assistant professor at the University of Georgia.*

## New from the Upjohn Press

### Food Stamps and the Working Poor

Peter Mueser, David Ribar, and Erdal Tekin

The authors examine detailed administrative data from three states—Georgia, Missouri, and South Carolina—and find that state rules and regulations often deter eligible low-income workers from receiving benefits while presenting hurdles for those who are already eligible to



recertify for benefits. The effects of various certification and recertification policies are a key focus of the book, but the authors also discuss the impacts of the relaxed provisions that make it

easier for able-bodied adults without dependents to receive food stamp benefits. They also critique a variety of policy proposals to alter the program, and offer several proposals for making the program less onerous for working families and individuals while addressing valid program concerns.

June 2019

138 pp. \$15.00 pbk ISBN 978-88099-660-0.

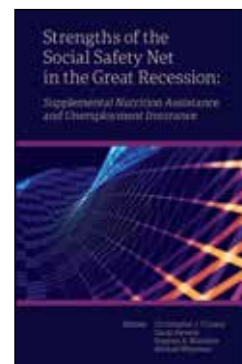
Also see [https://research.upjohn.org/up\\_press/256/](https://research.upjohn.org/up_press/256/).

### Strengths of the Social Safety Net in the Great Recession

#### Supplemental Nutrition Assistance and Unemployment Insurance

Christopher J. O'Leary, David Stevens, Stephen A. Wandner, and Michael Wiseman, Editors

During the Great Recession, many who lost their jobs became eligible for Unemployment Insurance (UI) and often Supplemental Nutrition



Assistance (SNAP), too. Many already receiving SNAP lost jobs and became eligible for UI. While both programs were stressed, they proved flexible enough to respond to the

needs of many of the victims of the recession. But little has been known about how the two programs interact. The chapters in this book show that, indeed, each program has considerable effects on the other and that policies governing them could be improved. Following chapters that detail the SNAP and UI programs along with existing research on their interaction, the editors use administrative data from six states to reveal how the programs interact and how they can be altered to work more effectively.

July 2019

430 pp. \$35.00 pbk ISBN 978-0-88099-663-1

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### Vol. 26, No. 3

**Employment Research** is published quarterly by  
the W.E. Upjohn Institute for Employment Research.  
Issues appear in January, April, July, and October.

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organization devoted to finding and promoting solutions to  
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